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निर्देश

(पहला पुनरीक्षण)

Handling, Storage and
Transport of Slaughterhouse
By-Products — Guidelines

(First Revision)

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FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Slaughterhouse and Meat Industry Sectional Committee had been approved by the Food and Agriculture Division Council.

This standard was first published in 1978 as a great potential was envisaged for utilization of slaughterhouse by-products for valuable feed-stuff, fertilizer and pet foods, if the by-products are handled, stored and transported under appropriate conditions. This standard was intended to provide guidelines for handling, storage and transport of slaughterhouse by-products thereby saving sizeable quantities of this raw material for the slaughterhouse by-product industries.

In present revision, following major modifications have been incorporated:

- a) Guidelines for transport vehicles used for condemned/rendering material has been incorporated.
- b) Risk based classification of slaughterhouse by-products into three categories incorporated.
- c) Guidelines for disposal of slaughterhouse by-products incorporated.
- d) This standard has been aligned with *Food Safety and Standard Regulations*, 2011.

Indian Standard

HANDLING, STORAGE AND TRANSPORT OF SLAUGHTERHOUSE BY-PRODUCTS — GUIDELINES

(*First Revision*)

1 SCOPE

This standard provides guidelines for proper handling, storage and transport of by-products of slaughterhouses and meat processing factories. This standard does not include the guidelines for the processing of pharmaceutical products like insulin and pancreatin.

2 REFERENCE

The following standard contains provisions which through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below:

<i>IS No.</i>	<i>Title</i>
1982 : 2015	Code of practice for ante-mortem and post-mortem inspection of meat animals (<i>second revision</i>)

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 1982 and the following shall apply.

3.1 Slaughterhouse/Meat Processing Plant/ Abattoir — A licensed place/building/ premises where food animals are slaughtered humanely in hygienic manner with proper ante-mortem and post-mortem inspection by veterinarian for human consumption.

3.2 Slaughterhouse By-Products — The secondary products obtained during the manufacture of a principal commodity or anything other than meat derived from a food animal.

3.3 Rendering — A process involving application of heat for separation of fat and protein residue.

3.4 Incineration — A process for burning waste material at high temperature until it is reduced to ash.

4 ANTE-MORTEM AND POST MORTEM INSPECTION

The by-products shall be obtained from animals subjected to proper ante-mortem and post-mortem inspection as per IS 1982.

5 CLASSIFICATION OF SLAUGHTERHOUSE BY-PRODUCTS

Slaughterhouse by-products may fall into one of the following three categories:

- a) *Category 1* — These materials carry highest risk, and consist principally of material that is considered a transmissible spongiform encephalopathies (TSEs) risk, such as specified risk material [those parts of an animal considered most likely to harbour a disease such as avian influenza, Bovine spongiform encephalopathy (BSE), for example bovine spinal cord]. Pet animals, zoo and circus animals and experimental animals are also classified as Category 1 material due to the level of veterinary drugs and residues they are likely to contain and due to the fact that adequate diagnosis of the exact cause of death of exotic animals may be difficult to achieve.
- b) *Category 2* — These materials are also high risk material and include fallen stock, manure and digestive content. Category 2 is also the default status of any slaughterhouse by-product not defined in either Category 1 or Category 3.
- c) *Category 3* — These are low risk materials and include parts of animals that have been passed fit for human consumption in a slaughterhouse but which are not intended for consumption, either because they are not parts of animals that we normally eat (hides, hair, feathers, bones, etc) or for commercial reasons.

6 HANDLING, STORAGE AND TRANSPORT OF FOOD SLAUGHTERHOUSE BY-PRODUCTS

6.1 Transport Vehicle for Condemned Material/ Rendering Material

6.1.1 The material is usually transported in customized, water-tight vehicles to prevent spillage of material on the highway and may be subjected to temporary storage at the rendering plant.

6.1.2 Slaughterhouse by-products shall be transported

in sealed new packaging or covered leak-proof containers or vehicles. Containers shall be dedicated to the use of specific categories of slaughterhouse by-products and where they shall be cleaned and disinfected after each use in order to prevent cross contamination.

6.1.3 A vehicle used for the transport of condemned material may not be used for any other purpose. However, after cleaning and disinfection the vehicle may be used for the transport of inedible material.

6.1.4 A vehicle may only be used for the transport of condemned material if,

- a) the load space is lockable, theft proof and sealable;
- b) the internal surface is leak proof and constructed of durable material; and
- c) floor is provided at its lowest point with a drain pipe capable of being securely closed by a screw valve.

6.1.5 The load space of the vehicle used for transporting material to a sterilizing plant shall be cleaned and disinfected to the satisfaction of an inspector at the end of each delivery, at a place specially constructed for the purpose.

6.1.6 During transportation, a commercial document or in certain circumstances, a veterinary certificate shall accompany the slaughterhouse by-products.

6.1.7 The commercial document shall record the date on which the material is taken from the premises; a description of the material; the quantity of the material, in weight or volume; the place of origin of the material; the name and address of the transporter; the name and address of the receiver and its approval or registration number, if appropriate; and the approval or registration number of the plant of origin, if appropriate.

6.1.8 Records and related commercial documents or veterinary certificates shall be retained for at least two years.

6.2 General Requirements for Collection and Identification of Slaughterhouse By-Products

6.2.1 Slaughterhouse by-products shall be collected, identified and disposed off without undue delay, in order to prevent risks arising to public and animal health. 'Undue delay' will depend on a case-by-case assessment depending on the type of slaughterhouse by-products involved.

6.2.2 Slaughterhouse by-products shall be collected and identified by category. Mixtures of different categories of slaughterhouse by-products shall be treated as the higher or highest risk of the mixed

materials, for example if Category 3 material is mixed with Category 2 material, all the material shall be disposed of as Category 2 material.

6.2.3 Category 3 material shall be labelled 'not for human consumption'. Category 2 material shall be labelled 'not for human/animal consumption'. Category 1 material shall be labelled as 'for disposal only'. Specific types of animal by-products such as collagen, blood products may require further labelling.

6.3 Requirements for Preservation, handling and Transport of Glands

6.3.1 Preservation

6.3.1.1 The best method of preservation applicable to all glands is freezing, and the collection of glands should therefore only be attempted where it is possible to freeze them within 1h of collection, and to deliver them in a frozen condition to the pharmaceutical producer. A freezer does not have to be a large installation. It is sufficient, if it is the size of a domestic refrigerator, provided the necessary temperature may be achieved rapidly.

6.3.1.2 Some glands may be preserved by chemical means, as, for instance, by immersing 1 kg of the gland in 1 litre of acetone. After 24 h, the glands shall be removed and placed in fresh acetone. Chemical methods of conserving glands should only be used after previous consultation with the manufacturers, when they will indicate whether and how they wish the glands to be chemically treated; 1 percent phenol or 2 percent formalin are sometimes recommended.

6.3.1.3 The third method of preservation is by vacuum-drying. This method allows the gland to be dried at a temperature low enough not to destroy its value for pharmaceuticals. Even glands which have been vacuum-dried shall reach the manufacturer quickly, as the fat contained by the dried material may become rancid and influence the potency of the product. Only certain glands may be dried, and here again the manufacturers usually provide their own type of drying equipment.

6.3.2 Collection

6.3.2.1 Only glands from healthy animals should be collected. Glands should never be in direct contact with water because the active principals may be partially or totally leached out. The collection of small glands is best done into a glass or metal container surrounded by crushed ice and fitted into a larger container.

6.3.2.2 Trimming of ligaments, blood vessels, meat, fat or any other foreign tissue shall be done with a pair of scissors and forceps as soon as the glands are removed from the body. Sometimes it is better to trim after glands have been chilled.

6.3.2.3 Quick freezing is essential; it is not enough to put the glands in a cooler; they shall be deep-frozen at a temperature not lower than 0°C. For freezing the glands should be spread on trays, so that as far as possible one does not touch another.

6.3.3 Handling

6.3.3.1 Collection

The greatest care should be taken that glands do not touch water nor get contaminated with faeces, gall or other impurities. The glands shall reach the manufacturer in a condition in which it left the freshly slaughtered animal. It should be of a bright pink or red colour.

6.3.3.2 Trimming

All foreign tissues, such as fat, veins, ligaments, etc., should be cut off immediately.

6.3.3.3 Chilling

If the gland is left at room temperature, the hormones will be destroyed within 2h to 3h by enzymes which are present in it. Only chilling and subsequent freezing can prevent this action. The glands should be collected into a vessel which is immersed in a larger container holding ice. In no circumstances should the gland itself be put direct on ice, since water leaches out the active principals from the gland.

6.3.3.4 Freezing

Glands are spread out individually on chilled metal trays, so that they do not touch one another. This is to prevent the formation of slabs or blocks of glands. Individual separate glands freeze faster throughout and therefore destructive activity is stopped more rapidly.

6.3.3.5 Packing

The glands should not be subjected to rough handling before they reach their destination and therefore heavy wooden boxes, barrels or strong fibre boxes should be used. The containers should first be lined with several layers of wax paper, as protection against thawing. Each container should be tightly filled to the top to give the minimum air space. A double box may be used, for instance, a corrugated fiber box inside a wooden one.

6.3.3.6 Marking

Every package shall be marked with the producer's name, the type of product, and the gross and net weights clearly stenciled.

6.3.4 General

The packages shall be transported under refrigerated conditions from the moment they leave the freezer until

they reach the manufacturer, apart from the short periods necessary for loading and unloading.

6.4 Requirements for Preservation, Handling and Transport of Edible Organs Such as Liver, Heart, Spleen, Kidney, Lungs, Testicles, Stomach Intestine, Brain, Bones and Blood

6.4.1 The edible offals collected from healthy animals passed after post mortem inspection, should be hygienically processed and preserved without any contamination, if necessary with any pre-treatment and stored at chiller (0-4°C) or freezer (-18°C) depending upon their usage.

6.4.2 The organs should not be subjected to rough handling before they reach their destination. The greatest care should be taken that they do not have contact with water nor get contaminated with faeces, gall or other impurities. All foreign tissues, such as fat, etc, should be removed and spread out individually on chilled metal trays, so that they do not touch one another. The material may be transported in tightly packed boxes/containers to protect from thawing with minimum air space. Every package shall have the producer's name, the type of product, and the gross and net weights clearly stenciled.

6.4.3 The best method of preservation applicable to all edible organs is freezing; it should be done within 1h of collection, and to deliver them in a frozen condition.

6.5 Disposal and Use of Slaughterhouse By-Products

6.5.1 Disposal of Category 1 Material

As the highest risk material, this material shall be destroyed by incineration, or by rendering followed by incineration. These are the only options for transmissible spongiform encephalopathies (TSEs) suspects. Other Category 1 material is also permitted to be pressure-rendered and disposed of in an authorized landfill site.

6.5.2 Disposal and Use of Category 2 Material

6.5.2.1 The basic options of incineration and rendering followed by incineration are permitted, as with Category 1 material. All Category 2 material may also be rendered and disposed of in an authorized landfill site, or used as fuel for combustion. Category 2 material may also be used for the manufacture of derived products.

6.5.2.2 Category 2 material may be rendered and then used for the production of organic fertilizers. It may also be rendered and used in an approved composting or anaerobic digestion plant. A very limited number of Category 2 materials (manure, digestive

tract content) may be applied directly to land without processing provided there is no risk of transmitting a disease.

6.5.3 *Disposal and Use of Category 3 Material*

6.5.3.1 As low-risk material, there are a much wider range of options for use and disposal of Category 3 material compared to higher risk material. Category 3 material may like Category 1 and Category 2 material be incinerated, or rendered followed by incineration. Category 3 material may also be rendered followed by disposal in an authorized landfill (unlike higher

category material this does not have to be pressure rendering) or used as fuel for combustion and for manufacture of derived products.

6.5.3.2 Category 3 material may be rendered for the production of pet food and organic fertilizers. Rendered Category 3 material may also be used in the production of animal feeding stuffs, though transmissible spongiform encephalopathies (TSEs) related restrictions on the feeding of processed animal protein severely restrict this. Category 3 material may be used directly in approved composting or anaerobic digestion plants.

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